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KARNAK: DEVELOPMENT OF THE TEMPLE OF AMUN-RA

الكرنك: تطور معبد آمون رع

Elaine A. Sullivan

Karnak, die Baugeschichte des Amuntempels
Karnak, le développement du temple d'Amon-Ra

The temple of Amun-Ra at Karnak (Luxor) experienced over 1,500 years of construction, destruction, renovation, and expansion. Here we provide a detailed survey of the current understanding of the temple's chronological development, based primarily on published excavation reports, as well as interpretive articles and recent discoveries at the site.

على مدار أكثر من 1500 عام مر معبد آمون رع بالكرنك بمراحل من البناء، التدمير، التجديد و التوسيع. هذه المقالة تعطي دراسة تفصيلية عن الفكر الحالي للتطور التاريخي للمعبد طبقاً لما ورد بتقارير الحفائر و أيضاً إستناداً إلى المقالات التفسيرية و الإكتشافات الجديدة.

The ancient city of Thebes (or *Waset* as it was known in Egyptian) played an important role in Egyptian history, alternately serving as a major political and religious center. The city's tombs, including those in the Valley of the Kings and the Valley of the Queens, are located on the west bank of the Nile, in the area's limestone cliffs. The mortuary temples of many of the New Kingdom kings edge the flood plain of the Nile. The houses and workshops of the ancient Thebans were primarily located on the river's east bank. Little remains of the ancient settlement, as it is covered by the modern city of Luxor. A series of important temples, composing the religious heart of Thebes, constitutes most of what remains today. To the south, close to the banks of the Nile, lies the Temple of Luxor. To the north, joined to Luxor by a sphinx-lined avenue, stand the temples of Karnak. Karnak can be divided into four sections: south Karnak, with its temple of the goddess Mut; east Karnak, the location of a temple to the Aten; north Karnak, the site of the temple of the god Montu; and main/central Karnak, with its temple to the god Amun-Ra.

Origins of the Temple of Amun-Ra at Karnak

The first incontrovertible evidence for the existence of a temple of Amun-Ra in the area of Karnak comes from the reign of Intef II in the First Intermediate Period. However, Egyptologists initially suspected that a temple existed at the site as early as the Old Kingdom. (This early temple would have been dedicated to the individual god Amun rather than the syncretized deity "Amun-Ra," as existing texts refer to Amun-Ra only after the Old Kingdom.) The "chamber of ancestors" in the *Akhmenu* "Festival Hall" contained a series of reliefs (taken to the Louvre Museum in 1843) depicting Thutmose III offering to a select group of kings whom he honored as his ancestors. Because the (destroyed) cartouche of the first king in the series was followed by that of Sneferu, the first king of the 4th

Dynasty, and the names of four subsequent Old Kingdom kings (Sethe 1961 [*Urk. IV*]: 608 - 610), some scholars interpreted this modified king-list as a record of the rulers who contributed constructions to the temple, thus pushing the temple's existence back substantially to the late 3rd or early 4th Dynasty (Lauffray 1979: 45). A statue of the Old Kingdom king Niuserra Isi, found in Georges Legrain's excavations at Karnak in the early 1900s, seemed to denote a tie between the Old Kingdom and a temple to Amun. However, the statue was not necessarily dedicated to the god Amun, and whether it originally stood within a temple to this deity is impossible to know (Ullmann 2007: 3 - 4). Indeed, Luc Gabolde of the Centre Franco-Égyptien d'Étude des Temples de Karnak (CFEETK) has recently identified a statue inscribed for Pepy I, "beloved of Amun-Ra, Lord of Thebes," as a Late Period votive offering probably found at Karnak (Gabolde 2008). If the practice of depositing statues of kings from former times was common, the presence of Old Kingdom statuary in the Karnak "cachette" would not verify the existence of an Old Kingdom temple. Gabolde, in his study of the Middle Kingdom court, noted that Old Kingdom ceramics were completely lacking in that area, as well as in other areas of the temple investigated down to the presumed level of the Old Kingdom (1999: 47). Unless new evidence is discovered, these findings suggest that a temple to Amun, or to Amun-Ra, did not exist at Karnak before the First Intermediate Period.

Precinct of Amun-Ra at Karnak in the First Intermediate Period and Middle Kingdom

With the ascendancy of the Intef family, the first hard evidence for the presence of a temple of Amun-Ra at Karnak appears. It was during this period of royal ambition and display that Intef II is thought to have erected a small mud-brick temple, probably with a stone-columned portico, on the east bank for the god Amun-Ra. Evidence for this construction comes from a sandstone column found reused at Karnak that includes an inscription dedicated by that king. A stela from the Intef cemetery on the west bank that mentions the "Temple of Amun" also provides support for the contention that such a cult place was operating prior to the Middle Kingdom (Gabolde 1998: 112 - 113; Ullmann 2007: 4 - 6). Gabolde's CFEETK excavations since the late 1990s have refocused interest on the earliest periods of the Amun-Ra Temple at Karnak. A series of small sandstone-block platforms, no larger than 10 × 10 m, were examined. These platforms, located along the west side of the later "Middle Kingdom court," lay below the levels of the thresholds of the Middle Kingdom temple of Senusret I (discussed below). Gabolde dated one phase of the reused sandstone in the series of platforms to the early Dynasty 11 kings based on a number of factors, including the similarity of the stone to other constructions of that period at Thebes. Other reused blocks, a few with fragments of relief scenes, could be dated to the later 11th and early 12th Dynasties. The platform therefore appeared to be the location of the original temple and portico of Intef II, dismantled soon after his reign, and replaced or rebuilt by the later 11th Dynasty kings and subsequently Amenemhat I at the same location (Gabolde 1999; Ullmann 2007: 6 - 7).

Senusret I greatly elaborated the temple. Gabolde has recreated its form using blocks excavated at Karnak in the early 1900s and after. At the site of the platforms, Gabolde visualized a limestone temple, punctuated by four doorways with red granite thresholds. He theorized that the new temple was much larger than the earlier cult buildings on this location, with the core structure covering approximately 38 × 38 m (fig. 1), fronted by an impressive portico of square pillars with statues of the king in the pose of the god Osiris (a number of these pillars are currently in the Cairo Museum). The building may have had a rectangular, open peristyle court, leading to a series of inner chambers via a central axis. The "holy of holies" (innermost sanctuary) would have lain off-axis and could only have been reached by making a ninety-degree turn to the left from the central line of rooms

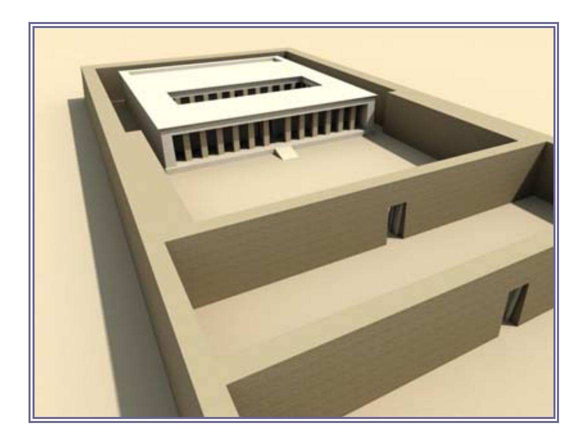


Figure 1. 3D visualization of Middle Kingdom temple with mud-brick enclosure walls and pillared portico.

(Gabolde 1998: 18 - 21). A calcite altar, reused and moved in the Ptolemaic Period, stood inside the room and held a shrine for the statue of Amun-Ra (Gabolde 1995; Ullmann 2007: 9). The later *Akhmenu* Festival Hall of Thutmose III echoed the layout of this structure (Gabolde 1998; 1999: 34 - 35).

Excavations in the court of the later sixth pylon have uncovered a series of mud-brick walls hypothesized to have served as a large platform in the area. Although this platform may be earlier than the temple of Senusret I, the excavator suggests that the platform was retained and the temple's central door opened out onto this terrace (Charloux 2007: 204).

François Larché recently offered an alternative reconstruction of the Middle Kingdom temple area. He suggests that the blocks of Senusret I formed a small temple with a double portico, similar in appearance to the contra-temple (see discussion of that building below) of Thutmose III. He argues that the decoration of the portico suggests an orientation eastward rather than westward, possibly towards a Nile channel located in east Karnak (Larché 2007: 409 - 421, 481). From architectural elements found in the court and towers of the fifth pylon, Larché also documented the existence of a sandstone colonnade of Senusret I. Its original location is unknown, but it may have been located near its place of discovery (ibid.: 421 - 422).

Senusret I added a number of small shrines to Karnak, probably lining important processional routes of the time. These included a black granite naos, a limestone bark shrine with side windows, and the famous peripteral chapel, known as the "White Chapel," reconstructed in Karnak's Open Air Museum (Pillet 1923; Traunecker 1982; Ullmann 2007: 10 - 12). The limestone White Chapel, decorated with scenes of the king interacting with Amun-Ra and other gods, seems to have been a bark shine, constructed to play a part in the king's Sed Festival celebrations (Lacau and Chevrier 1956).

Remains of mud-brick walls of the 11th or 12th Dynasty suggest that at least two enclosures encircled the Middle Kingdom temple of Senusret I: a thick outer wall and a thinner interior wall with attached magazines (Charloux 2007: pl. IV). The precinct can be imagined to have extended west at least to the position of the present fourth pylon. Limestone doorjambs and lintels adorning the enclosure wall's entrances have been discovered at the site near the Middle Kingdom court, and remains of the wall itself were excavated around the temple's perimeter (Gabolde 1998: 114 - 115). Charles Van Siclen has argued that a larger, bastioned mud-brick wall (with sides of over 250 m in length) enclosed this entire temple complex, with its western edge somewhere in front of the present third pylon, and its southern edge near the present eighth pylon. The Nile's eastern bank would have run close by, limiting the westward expansion of the temple (Van Siclen 2005a: 29, 32, and fig. 4).

Van Siclen's excavations in the court of the ninth pylon suggest that a small gated court opened out from the southern edge of this bastioned enclosure, outside of which stood the windowed limestone shrine of Senusret I atop a brick platform (2005a: 32). These structures would be the earliest signs of a north-south processional route from Karnak, whose destination at this period can only be speculative, as Middle Kingdom forms of the Luxor and Mut Temples have not yet been identified (Bell 1997: 147 - 148 and note 61;

Bryan 2005: 181; Ullmann 2007: 11). It is relevant to note, however, that Bryan recently reported finding an inscribed fragment possibly referencing a Middle Kingdom form of the Mut Temple (Bryan 2008: 37 - 38). Ongoing work under the temple's foundations may eventually produce conclusive evidence.

Precinct of Amun-Ra in the Second Intermediate Period

Little is known about activity in and around the Temple of Amun-Ra during the Second Intermediate Period. However, Polz's recent study of the 17th Dynasty suggests that interest in the temples of Karnak was renewed under these Theban rulers. Statuary, stelae, and small obelisks found at greater Karnak (or likely originating there) attest to a "revival" of cult activity at Karnak at the beginning of the dynasty (Polz 2007: 77 - 81, 374 - 375).

Van Siclen's work around the later eighth and ninth pylons provides evidence that temple-building activity continued in the late Second Intermediate Period. According to his reconstruction, at the end of the 17th Dynasty or the beginning of the 18th Dynasty, the southern court along the Middle Kingdom temple's enclosure wall was renovated. A new pylon entrance was added to the south, and a columned structure with a ramped entrance was added along the court's east wall (Van Siclen 2005a: 33 - 35, fig. 8).

Excavations in the court of the tenth pylon demonstrate that the area south of the hypothesized temple enclosure of the Middle Kingdom contained domestic remains from the Second Intermediate Period (Azim 1980: 161). These findings support the contention that this area was still part of the secular city of Thebes until its inclusion in the temple precinct under Horemheb in the late 18th Dynasty.

Precinct of Amun-Ra in the Early 18th Dynasty

Recent work highlighting the changes at Karnak during the reign of Amenhotep I has dramatically increased our knowledge of the temple at the start of the 18th Dynasty. Catherine Graindorge studied over eight hundred decorated limestone blocks and fragments in the Karnak magazines, all of which were excavated in various parts of the site in the twentieth century. She then used this material to hypothesize Amenhotep I's modifications to the courts and walls surrounding the Middle Kingdom temple. Additions by the king included stone chapels and storage rooms along the Middle Kingdom forecourt's north and south sides, a central bark-chapel in the forecourt of the temple bounded by two large screen walls, and a line of chapel niches dividing the forecourt into western and eastern halves. The inner Middle Kingdom mud-brick wall and door to the forecourt, which she situates near the later sixth pylon, were replaced by a high wall and gate with a two-columned portico. At the temple's main western door, the location of the later fourth pylon, Graindorge argued that a new large gate was erected. The mud-brick enclosure wall immediately surrounding the north, east, and south walls of the Senusret I temple was replaced with a limestone enclosure (Graindorge 2002).

Amenhotep I adorned Karnak with a number of new bark-shrines. Traditionally, scholars assumed that the king's calcite chapel served as Karnak's central bark-shrine until the reign of Hatshepsut (Blyth 2006: 35 - 36). Graindorge argues, more recently, that the central bark-shrine was made of wood and that the calcite bark-chapel in fact lay further to the west within the temple complex. A second shrine, an exact copy of Senusret I's limestone White Chapel, probably remained outside the temple's western gate, along with its precursor (Graindorge 2002). The position of these shrines would have accentuated the north-south axis route of the temple, an area also attended to by the king. He seems to have rebuilt part of the south mud-brick precinct wall, enclosing the small Middle Kingdom court there within the larger temple complex. A new pylon was added, and a colossal statue of Amenhotep I was placed in front of what must have been at that time the temple's principal southern entrance (Van Siclen 2005a: 35 and fig. 10).

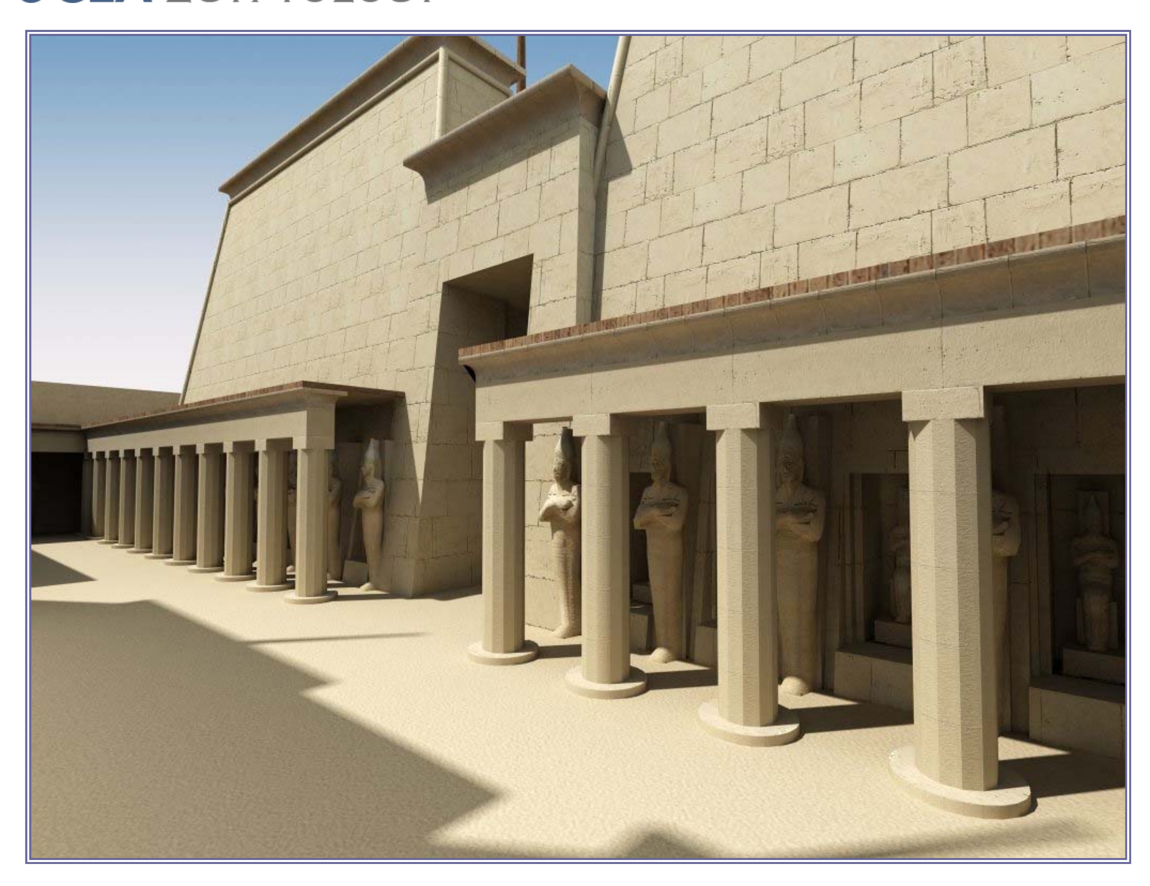


Figure 2. 3D visualization of fourth pylon with fasciculated columns and standing Osiride statues of Thutmose I between the seated statues of the king.

The construction efforts of Thutmose I had a great impact on the arrangement of the temple for years to come. Scholars have generally attributed both the fourth and fifth pylons to the king, as well as a corresponding stone enclosure wall, which together still form the core area of the temple (Björkman 1971: 61). Thutmose I originally lined the court of the fifth pylon with a portico of 16 fasciculated columns (Larché 2007: 446).

By erecting the first pair of granite obelisks at Karnak in front of the fourth pylon (the temple's main gate at the time), Thutmose began an association of obelisks with the god Amun-Ra that may have bolstered the divinity's rising universality (Bell 2002: 18). His act was emulated and outperformed (with taller and larger obelisks) by a number of 18th and 19th Dynasty rulers.

Politically, Karnak took on new importance in the 18th Dynasty, as the pharaohs began to use the temple as a means of demonstrating their divinely ordained selection as king. The enhancements of Thutmose I highlight this change: among his contributions to the temple was the addition of a *wadjet* hall, where coronation rituals took place with the god Amun-Ra sanctioning the choice (Golvin and Goyon 1987: 44).

The *wadjet* hall was originally an open-air court between the new fourth and fifth pylons of the king. A number of reconstructions of the hall have been made, including Ludwig Borchardt's often-reproduced design: a single portico lining the east edge of the fifth pylon, ringing the entire new stone wall of the temple (Carlotti and Gabolde 2003: 255). More recently, however, Jean-François Carlotti and Luc Gabolde have proposed, based on their excavations at Karnak, a new interpretation of the phases of construction of this hall, as well as its general form. In the

reign of Thutmose I, Carlotti and Gabolde identified two major periods of construction. The first consisted only of the addition of rectangular niches in the east face of the fourth pylon for the placement of Osiride statues of the king. In the second phase (fig. 2), larger Osiride statues were placed lining the wall between the niches. Fasciculated sandstone columns with inscriptions of the king were added to the four sides of the hall, forming a covered peristyle to protect the exposed statuary (Carlotti and Gabolde 2003: 284 - 286).

Thutmose II added a new pylon to the west of the old temple entrance (later torn down for the construction of the third pylon, so it does not figure in the pylon numbering system at Karnak), creating a large "festival court," enclosing the obelisks of Thutmose I within the building, and establishing a new western gate to Karnak. Along the hall's south side, a small pylon entrance led to the constructions along the temple's southern axis. Gabolde has used blocks found in the third pylon to reconstruct the appearance of the inscribed doors, side walls, and small pylon of the court (Gabolde 1993).

Thutmose II commissioned a pair of red granite obelisks, inscribed fragments of which have been found at Karnak, presumably for placement in his new hall. Gabolde has reconstructed (on paper) one of these monoliths. The preserved inscriptions of the king show that the monument originally belonged to him, but that he must have died before it could be completed and raised, as Hatshepsut added her own inscription, with a dedication to her father, Thutmose I. Two socles found subsumed by the third pylon and its gate likely mark the location of these obelisks (Gabolde 1987).

Tura limestone blocks probably recovered from the "cachette court" provide evidence that Thutmose II had constructed a two-roomed bark-shrine for the temple, similar in form to the later "Red Chapel" of Hatshepsut. The bark shrine may have stood in the future location of the Red Chapel, in front of the Senusret I temple, or it may have been positioned in the new "festival court" of the king. The chronology of its destruction is not defined, but modified inscriptions show it must have been dismantled between the ascension of Hatshepsut to the kingship and her proscription at the end of the reign of Thutmose III (Gabolde 2005).

A painted scene from the Theban tomb of Neferhotep (TT 49) implies that at some time in the 18th Dynasty, a giant T-shaped basin connected to the Nile by a canal was cut on the west side of the temple. A rectangular quay is depicted as flanking its eastern edge (Gitton 1974). If the basin was located in the vicinity of the later second pylon, as Michel Gitton suggested in his reconstruction of Karnak in the reign of Hatshepsut (1974: fig. 1), the Nile must have shifted westward from its location in the Middle Kingdom. It is perhaps this shift that allowed the westward expansion of the temple in the New Kingdom. The presence of a canal and basin may equally have limited further movement of the temple west at this time.

The *wadjet* hall would be dramatically changed during the reign of Hatshepsut. The queen removed her father's numerous stone columns and replaced them with five gilded-wood papyriform *wadj*-columns (*wadj* being the Egyptian term for papyrus). In the center of the hall she erected two red granite obelisks (one remains standing today) with electrum overlay (fig. 3). These tall monuments prevented her from roofing the hall completely, but she covered the side aisles of the hall with a wooden ceiling (Carlotti and Gabolde 2003: 289 - 291). The queen's obelisks were dedicated to the celebration of her Sed Festival in the 16th year of her reign (Bell 2002: 21 - 22).

Hatshepsut transformed the very core of Karnak, removing the Osiride portico of the Middle Kingdom temple and most of the forecourt constructions of Amenhotep I, including his entrance gate and bark chapels (Carlotti 1995: pl. V). To the front of Senusret's temple, she appended a suite of rooms, her "Palace of *Maat*" (Gabolde 1998, 1999). The queen ordered a beautiful two-



Figure 3. 3D visualization of one of Hatshepsut's obelisks in the *wadjet* hall during the queen's reign.

roomed bark chapel of rose quartzite and black diorite, the Red Chapel, as a showpiece for Amun-Ra (Burgos et al. 2006, 2008; Lacau and Chevrier 1977: 23 - 25). In their recent republication of the chapel, CFEETK scholars concluded that the chapel's placement was, as traditionally thought, within the Palace of *Maat* (Burgos et al. 2006: 7 - 8, 418 - 419; 2008). As the insertion of the chapel into the Palace of *Maat* would only have been possible if renovations to the palace's original rooms (including the removal of a number of the walls on the northern side) took place during the reign of the queen, it seems that Hatshepsut re-envisioned these rooms expressly to expand the area for her Red Chapel, finished only sometime around year 17 of her reign (Carlotti 1995; Nims 1966).

Over 200 limestone blocks recovered primarily from the "cachette court" have been identified by Gabolde as part of a multiple-roomed structure (named the *Netjery-Menu*) dated to the early co-regency of the queen. Relief scenes and inscriptions depict Thutmose II, Hatshepsut, her daughter Neferura, and Thutmose III involved in the temple's daily ritual. The original location of this structure remains unknown, but the reuse of a few of its dismantled blocks in foundations for Hatshepsut's eastern obelisks and Thutmose III's *Akhmenu* (discussed below) could suggest it was located in the eastern section of the temple and removed for the construction of these later monuments (Gabolde 2005).

Another recently rediscovered monument of the queen's was composed of a number of limestone niches dedicated to the royal statuary cult. These niches, also dated to the early years of the queen's co-regency, were seemingly removed before she ascended to

the throne as king. Similar in size to the line of chapel niches constructed in front of the Middle Kingdom temple by Amenhotep I, the Hatshepsut niches may have been located close by, although the orientation of the relief scenes suggests they would have stood perpendicular to (and not in line with) the earlier niches (Gabolde 2005).

The queen may have ordered the construction of another chapel to Amun-Ra, the location of which is also unknown, but whose name, the *set-djeseret*, suggests it was located in a "sacred place" (i.e, the central, protected areas) of the temple (Gabolde 2005).

Hatshepsut placed another pair of obelisks at the eastern edge of Karnak, outside the stone enclosure walls of Thutmose I. Although now destroyed, the obelisks are mentioned in a quarry inscription at Aswan and depicted in the queen's temple at Deir el Bahri (Habachi 1984: 60 - 63, 68). Luc Gabolde and scholars from the CFEETK have been working on documenting pieces from these obelisks, and they have reconstructed their appearance as displaying a central line of hieroglyphs, flanked by scenes of Hatshepsut (and sometimes her nephew) with the god Amun-Ra (Gabolde 2007).

A large stone pylon, the eighth, was constructed by the queen to the south of the temple, along what appears to have been the established north-south processional route. The calcite bark-shrine of Amenhotep I, previously standing in the main or western section of the Middle Kingdom temple, may have been moved just north of her new pylon along this route (Blyth 2006: 36). At present, the destination of the southern processional way can positively be identified as the temples of Mut in south Karnak and Amenemope in Luxor. Reused blocks from the queen's temple of Mut have recently been discovered during excavations at that site (Bryan 2005), and the Thutmoside temple and an accompanying triple bark-shrine at Luxor are known to have played a role in the queen's Opet Festival ceremonies (Bell 1997: 147 - 149; Van Siclen 1987: 159 - 160, fig. 2).

Karnak experienced another period of vast change during the reign of Thutmose III. The greatest addition was a huge temple, the *Akhmenu* ("the most glorious of monuments") Festival Hall, placed behind Karnak's east wall, built after the king's 23rd year. The structure consisted of a large pillared hall leading to a set of three shrines, a series of rooms dedicated to the god Sokar, a hall decorated with relief scenes of flora and fauna observed during the king's foreign military campaigns, a chamber with niched walls that served as the main shrine of the divine image, and an upper sun-court. The exact cultic nature of the temple remains elusive, but it may have held ceremonies for the regeneration of the king on earth (Bell 1997: 158; Carlotti 2002; Pécoil 2000). A door along the temple's southwest corner had previously been considered the primary entrance to the *Akhmenu*; however, recent work by CFEETK archaeologists has uncovered an axial doorway in the temple's eastern wall as well (Larché 2007: 444 - 445).

A new stone enclosure wall was constructed, enclosing the *Akhmenu* in the greater temple complex. The obelisks of Hatshepsut were incorporated into a small contra-temple along the enclosure's eastern wall. Contra-temples, usually appended to the rear wall of a temple and opening outward, provided a location for those not allowed within the temple proper (such as the public) to interact with the divinities. Often statues of the king were located at these shrines, and people would petition the images to act as intermediaries with the gods on their behalf. At the center of Karnak's contra-temple stood a large calcite naos with a dyad of Thutmose III and the god Amun-Ra (although it originally may have depicted Hatshepsut and Thutmose III, with the queen's figure later recarved) (Bell 2002: 142 - 144; Brand 2007: 60 - 61; Varille 1950: 23, note 43).

Thutmose III also added a stone pylon (the seventh) and connecting walls between the queen's pylon and the temple wall along the southern processional route (fig. 4). In front of the pylon, he raised red granite obelisks



Figure 4. 3D visualization of seventh pylon with Thutmose III's obelisks.

(Habachi 1984: 73 - 77). Along the east wall of the eighth pylon's forecourt, he placed a calcite bark-shrine surrounded by peripteral pillars. This may have replaced the earlier calcite shrine of Amenhotep I at the same location, as Thutmose III gave his shrine an identical name (Björkman 1971: 58; Nims 1955: 113).

A huge sacred lake was cut into the space southeast of the temple. This may have been an expansion of a pre-existing lake at the same location. To the east of the lake a large mud-brick enclosure wall with exterior bastions was constructed, traditionally assigned to Thutmose III (although it may actually be older). The wall was enlarged and renovated in at least three phases, the last of which may date to as late as the 25th Dynasty (Lauffray 1995a). Recent excavations have uncovered the continuation of the wall to the south, demonstrating that it indeed extended southward to the area of the later Nectanebo enclosure wall (Laroze and Arnaudiès 2007: 99 [#80] and pl. 1; Lauffray 1995a: 259, 261, fig. 2). During work in the northeast part of the precinct (the "Osiris sector"), François Leclère exposed part of a bastioned wall of the 21st Dynasty (dated by stamped bricks) that he believed followed the northern line of the earlier 18th Dynasty wall at the same location. This section of the wall exhibited later repairs as well (Grimal and Larché 2007: 29 - 30; Leclère 1996: 12).

To the north of the main precinct, the king erected a small sandstone temple to the god Ptah (possibly replacing an earlier one of mud-brick). A hall with two columns fronted the temple's triple sanctuary (Barguet 1962: 13 - 14; *PM* 1972: 195 - 202).

Within the central core of Karnak, Thutmose III ordered significant remodeling. Behind the fifth pylon, he had a smaller pylon erected, the sixth, creating a small pillared court in front of the Palace of *Maat*. He replaced the limestone chapels of Amenhotep I along the sides of this court with sandstone replicas whose decoration commemorated the earlier king (Björkman 1971: 77 - 78). Walls were appended to the east faces of the fifth and sixth pylons and a granite gate was erected between the pylons, creating a corridor along the temple's central axis to the Palace of *Maat* (Arnaudiès-Montélimard 2007; Björkman 1971: 77 - 78). Although he appears to have continued the decoration of Hatshepsut's unfinished Red Chapel, the king eventually removed and dismantled the chapel, with the front and rear doors reused in an interior wall of the palace's northern suite of rooms and the new corridor behind the sixth pylon (Burgos et al. 2006: 11, 103 - 105; Dorman 1988: 54 - 65). Some of the palace's interior walls were removed, either by the king, or earlier, by Hatshepsut, to allow the emplacement of the central bark-shrine. The Red Chapel was replaced with a new granite shrine, of similar size and shape, and a new entrance portico was designed for the Palace of *Maat* (Carlotti 1995; Carlotti and Gabolde 2004; Dorman 1988: 56 - 65; Legrain 1916: pl. VII: figs. 1 - 3).

Possibly due to damage incurred in the *wadjet* hall from heavy rainstorms, Thutmose III began a total reworking of the space (fig. 5). A stone gateway was erected around the obelisks of Hatshepsut, completely encapsulating their lower portions. He ordered the removal of the wooden *wadj*-columns, intending to replace them with six sandstone columns in the north half of the hall and eight in the south. The interior walls of the court were covered with a skin of

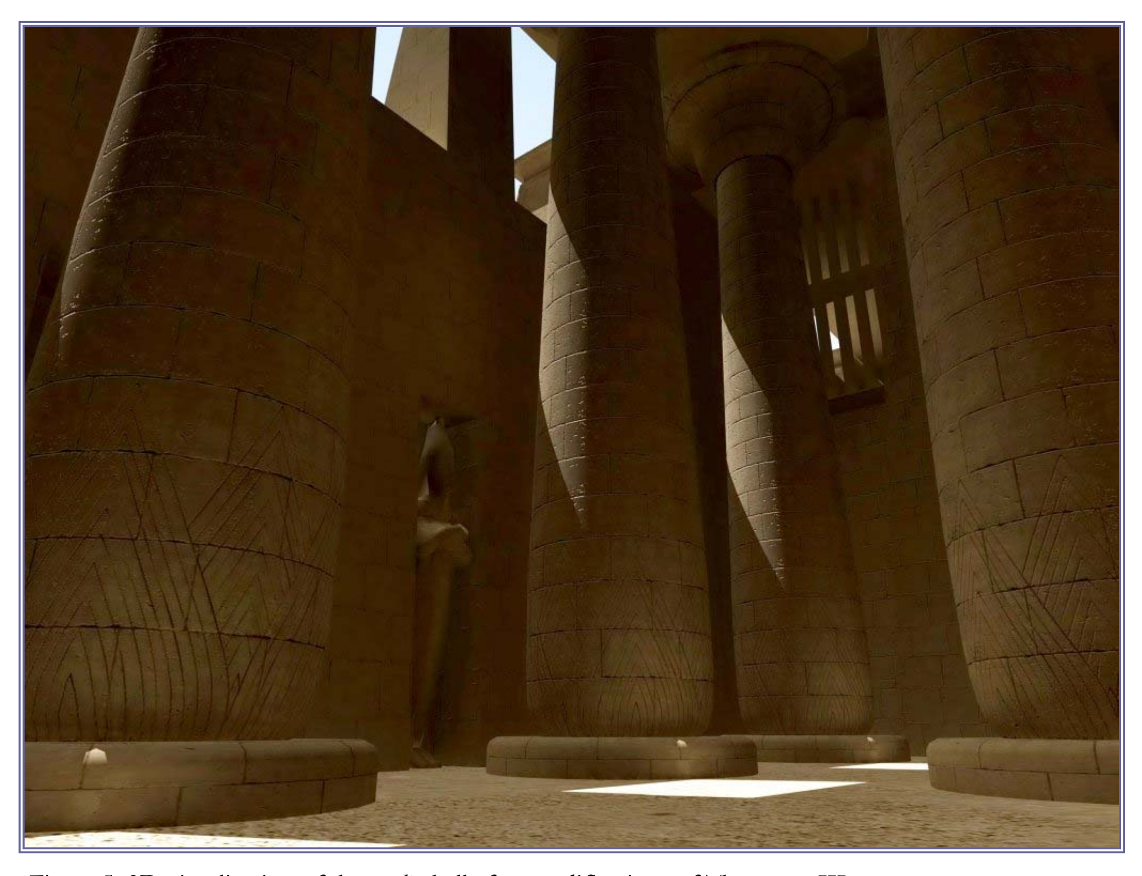


Figure 5. 3D visualization of the *wadjet* hall after modifications of Thutmose III.

stone, obscuring the original statue recesses of Thutmose I. Before his death, it appears that the king only had time to roof the northern part of the hall with sandstone slabs, supported by his network of pillars, gateway, and court walls. Amenhotep II finished the work, raising the eight southern columns and their roof (Carlotti and Gabolde 2003: 293 - 295).

Thutmose III raised his own pair of granite obelisks between those of Thutmose I and II in the festival court before the fourth pylon. The bases of these obelisks have been discovered bordering the east side of the third pylon (Gabolde 1987: 151, pl. II). Study of fragments of these obelisks show they were inscribed by a number of later kings (Gabolde 2007).

We have so far described here the traditional view of the chronology of the core area of the Amun-Ra temple. François Larché has recently proposed a radical new interpretation of the construction chronology of the early 18th Dynasty (Burgos et al. 2008: 81 - 122, 332 - 341; Larché 2007). Contrary to the traditional understanding of this period, Larché's hypothesis advocates the following main points: Amenhotep I was primarily responsible for the dismantling of the Senusret I temple (presumably due to the degradation of the stone); Amenhotep I built a new temple for Amun-Ra oriented to the west (possibly because of the loss of the branch of the Nile in east Karnak) in the so-called "Middle Kingdom court"; the fourth pylon and its *wadjet* hall (traditionally assigned to Thutmose I), the first pair of obelisks before the fourth pylon (inscribed for Thutmose I), and the precursor of the third pylon and its festival court (both traditionally assigned to Thutmose II) were all built or completed by Hatshepsut; and the obelisks of the *wadjet* hall were encased with a gateway of

stone by the queen herself (not Thutmose III), for technical or cultic reasons. According to Larché's hypothesis, Thutmose I and Hatshepsut destroyed most of the temple of Amenhotep I, with Amenhotep III eventually removing what remained in the western section of the "Middle Kingdom court." Larché bases his argument on the results of recent excavations at the temple, including foundation deposits that suggest Hatshepsut intended or began a number of renovations ascribed to Thutmose III (Burgos et al. 2008: 84).

The Proscription of Hatshepsut

It is impossible to discuss the work of Thutmose III at Karnak without mentioning the proscription of his aunt, Queen Hatshepsut, which took place sometime after year 42 of the king's reign (the reign includes his more than 20 years of co-rule with the queen). A number of changes, such as the bricking up of the queen's obelisks, took place substantially before the proscription (Nims 1966: 100). They appear to relate to modifications in the temple's form and do not necessarily reflect animosity towards the king's co-regent (recent work by Larché, mentioned above, suggests the queen may have been responsible herself for this modification). The alterations to Hatshepsut's monuments at Karnak from late in Thutmose III's reign included the erasure of her name (the names of Thutmose I or II being carved in its stead), the careful modification of images of the queen, and only the occasional aggressive destruction of her monument or image (Dorman 2005: 267 - 268). The obelisks of the queen, then enclosed in a stone gateway, were left intact. The erased depictions of the queen on the eighth pylon were only recarved under Amenhotep II. Scenes on the Red Chapel were defaced after it had been dismantled and its blocks left to sit unused within the temple precinct for an unknown period of time (Dorman 2005: 268; Van Siclen 1989). Within the Palace of *Maat*, the king added new sanctuary walls along the north side of the bark chapel inscribed with his famous "annals." The figures of the queen



Figure 6. A scene of Queen Hatshepsut in the "Palace of *Maat*." The queen's figure, as well as her name in the yellow cartouches, has been carefully chiseled away.

under the new walls were carefully chiseled away, but the scenes were covered over before the entire program was recarved, suggesting the proscription had occurred quite recently (fig. 6).

Thutmose III's "annals" (also covering the vestibule behind the sixth pylon) described military campaigns conducted during his 22nd through 42nd years on the throne, and their commemoration therefore could not have happened prior to his 42nd year. The carving of the "annals" may have accompanied the placement of a new granite bark shrine, dated to year 45 of his reign (Dorman 2005: 268 - 269). The chronology of these changes suggests that the proscription against Hatshepsut was not the cause of the modifications in the *wadjet* hall, nor the reason for the removal of her bark shrine (Dorman 1988: 56 - 65). One can instead view most of Thutmose III's alterations at Karnak as part of a long tradition of temple transformation in which Hatshepsut herself participated. It was only at the very end of his rule, after many of his changes had been initiated or carried out, that her name and image were deemed worthy of being eradicated.

Precinct of Amun-Ra in the Mid-18th Dynasty

The renovations of later kings have obscured many of Amenhotep II's contributions to Karnak. Van Siclen, who has studied the so-

called "edifice of Amenhotep II" on the east side of the court of the tenth pylon, has demonstrated that the present structure is composed of blocks from multiple monuments of Amenhotep II originally located south of the eighth pylon. These included a pillared portico and a bark station with a pillared façade. The buildings were seemingly pulled down and the blocks reused in a new structure when Horemheb appended the ninth and tenth pylons and their courts onto the southern processional route (2005a: 27, 39, fig. 14; Van Siclen 2005b: 187 - 189).

Amenhotep II originally adorned this new court with a small pylon and a colossal statue of himself, creating another new southern entrance to the temple (Van Siclen 2005a: 39 - 41, figs. 14, 15). This pylon too would be swept away by Horemheb during his erection of the ninth pylon.

As mentioned above, Amenhotep II finished the construction on the southern section of Thutmose III's *wadjet* hall. To the east of this hall, along the narrow corridor leading to the *Akhmenu*, stood a small structure with a central shrine and surrounding square piers. This likely functioned as a "station of the king," a place for the king or sacred bark to pause during festival journeys. The building has not been firmly dated, but the decoration of the corridor was accomplished under Amenhotep II (Van Siclen 1986: 41).

The king also added an inscribed calcite chapel to the festival court of Thutmose II. An initial study of the structure's original form and position suggested that it had stood within a surrounding colonnade, either within the court of the seventh pylon, or bisecting one of the walls of the festival court (Van Siclen 1986). However, details learned during the recent reconstruction of the chapel in Karnak's Open Air Museum led François Larché to believe it was instead wedged between the obelisks inscribed for Thutmose I in that court, opening eastward (fig. 7) (Larché 2007: 477 - 480). The identification of a wall bisecting the court of the seventh pylon has led to an alternative reconstruction by



Figure 7. The chapel of Amenhotep II reconstructed in Karnak's Open Air Museum. The faux pink-granite posts flanking the chapel show a possible context for the chapel within the festival court.

Jean-François Carlotti. He suggests that the chapel stood between this wall and the southern entrance to Thutmose II's festival court. It was paired with a second shrine of the king, this one of red granite, each of which stood against the court's outer walls (on opposite sides), opening inward. Short walls flanking the sides of the chapels and the northern and southern walls of the small court created two small rooms along the sides of each chapel. Both areas would have been covered by a pillared portico (Carlotti 2008).

In the next reign, Thutmose IV added a vividly painted sandstone double peristyle to the festival court inscribed for Thutmose II (Bryan 1991: 167 - 169; Letellier 1979, 1991). About one thousand blocks have been recovered at Karnak and reassembled in the Open Air Museum (fig. 8). The original position and layout of the columns is at least partly known from remains of the east side of the peristyle that were left in situ (Larché and Grimal 1993: viii). The king placed a calcite bark-shrine, quite similar to the calcite shrine of Amenhotep I, within the renovated hall (Bryan 1980: 228).

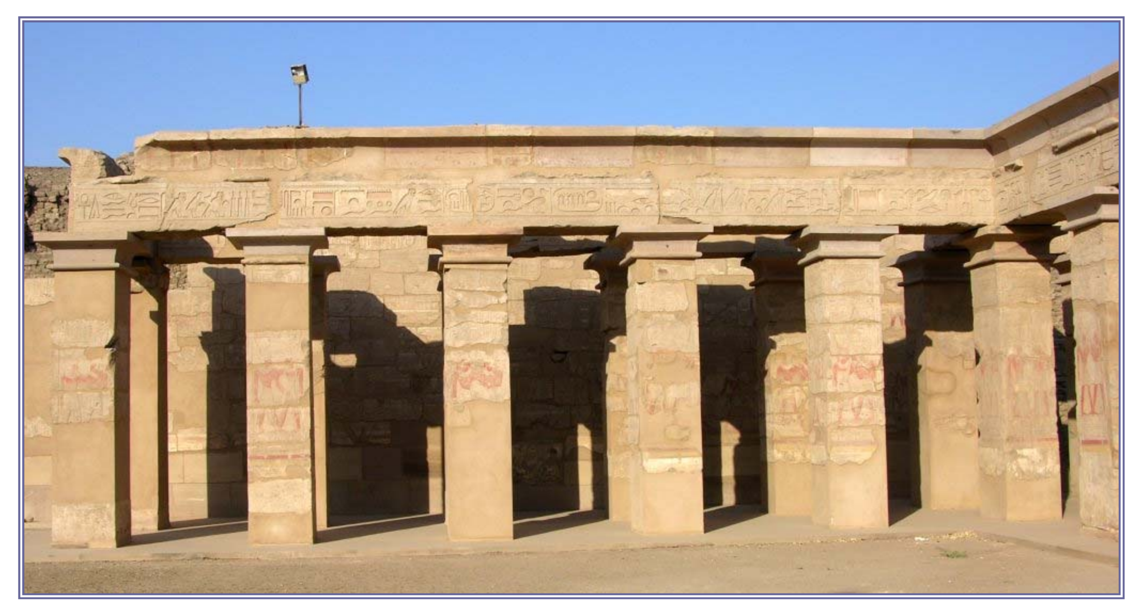


Figure 8. The double peristyle of Thutmose IV reconstructed in Karnak's Open Air Museum.

East of the Amun-Ra Temple proper, Thutmose IV erected an obelisk originally decorated and transported to the temple by Thutmose III. The red granite monolith had apparently languished on the ground for many years. He added lines of inscriptions around those of his grandfather and raised the obelisk in the area of Karnak particularly focused on the worship of the sun. Unlike all the other obelisks at Karnak, this "unique" obelisk was intentionally placed alone (Bell 2002: 23 - 25; Habachi 1984: 112 - 114).

Amenhotep III's initial work at Karnak was a continuation of the activities of his father centered on the festival court of Thutmose II. He finished the decoration on his father's shrine and likely added a northern door to the mud-brick precinct wall aligned with the hall's north-south axis (Bickel 2006: 12 - 13). Later, he dramatically re-envisioned the temple, tearing down the pylon erected by Thutmose II and destroying most of the festival court west of the fourth pylon. He built a new pylon to the east, the third pylon, using stone blocks of the removed structures in its foundation and fill. The western half of Thutmose IV's peristyle, his calcite bark-shrine, the limestone White Chapel of Senusret I, the calcite chapel of Amenhotep I, and the loose blocks of the Red Chapel of Hatshepsut all fell victim to the renovations (Lauffray 1979: 49).

Amenhotep III began construction on a new pylon (the tenth) to the south of Hatshepsut's eighth pylon, extending the southern processional route towards the Mut Temple. While building was still at its beginning stages, he had two colossal statues of himself placed flanking the pylon entrance. With only a few courses completed on the pylon, the king must have died, as construction halted and was not to be resumed until the reign of Horemheb (Azim 1982).

Two other important structures built by Amenhotep III, both of whose exact location within the precinct remains unknown, attest to some of the less-documented aspects of the temple's role in the city as a center of storage and production. Sandstone blocks from the "granary of Amun" have been found reused as fill in the towers of the second pylon. Contemporary Theban tomb scenes portray the granary as a structure with multiple rectangular rooms, each heaped high with mounds of grain. A second building, a *shena-wab*, was the site of the preparation of temple offerings. Parts of an inscribed stone door

from this building were uncovered near the ninth and tenth pylons, and the *shena-wab* may have been located in the southeast quarter of the precinct (Bickel 2006: 14 - 19, 22).

Precinct of Amun-Ra in the Late 18th Dynasty

Amenhotep IV began his reign continuing his father's projects at Karnak and he either added or decorated a vestibule for the third pylon (Sa'ad 1970). Quickly, however, the king shifted his focus to constructing a jubilee complex in east Karnak. A number of major structures were built using the new construction material of choice: small, easily portable sandstone (*talatat*) blocks (Redford 1984: 64). The location of most of the structures remains unconfirmed, but the *Gem-pa-Aten* was discovered east of the Amun-Ra precinct in the 1920s. The western part of the building, the only section so far substantially uncovered, formed a rectangular open court lined by a covered colonnade with square piers. The temple was enclosed by its own mud-brick enclosure (Redford 1984: 102 - 105). Huge androgynous statues of the king and his wife Nefertiti stood against each column (Arnold, Dorothea 1996: 18 - 19). One of the king's earliest temples, the "Great *Benben* of Ra-Horakhty," and a second structure, the *Hut-Benben* (which, from its decoration, appears to have belonged solely to the queen), are posited to have stood near the "unique" obelisk of Thutmose IV (Arnold, Dorothea 1996: 39; Redford 1984: 72 - 78; Vergnieux 1992: 191 - 200, pls. 58 - 59, 67). The *Rud-Menu* and the *Teny-Menu* (whose decoration suggests it included a royal podium, a "window of appearance," and a series of gateways leading to an open-air platform for the worship of the Aten) may have bordered the *Hut-Benben* to the east (Vergnieux 1992: 203 - 204, pl. 67).

Sometime in his fifth regnal year, Amenhotep IV changed his name to Akhenaten and launched a fervent attack on the existence of gods other than the solar deity Aten (Allen 1996). Amun was a special target, and his name and figure were effaced from temples throughout Egypt, including at Karnak. Shortly after, the king decided to leave the city of Thebes and move the center of cult, the royal residence, and his burial site to Middle Egypt, to a city he named Akhetaten (modern day Tell el-Amarna). The wealth of the Amun-Ra Temple at Karnak was diverted to building projects for the new city, and the temple itself was closed (Redford 1984: 137 - 142).

After Akhenaten's death, the boy king Tutankhamen reopened many temples and reinstituted construction and decoration projects at Thebes (Redford 1984: 205 - 211). A series of sphinxes originally inscribed by this king and his successor, Aye, line the processional way to the Mut Temple in the south. Initially anthropomorphic, the sphinx heads were replaced by Tutankhamen with carved heads of rams, and set up in this location. The male and female sphinxes seem originally to have represented Amenhotep IV/Akhenaten and Nefertiti, and they presumably originated in east Karnak (Cabrol 2001: 24 - 25, 221 - 227; Murnane and Eaton-Krauss 1991).

With the ascent of Horemheb to the throne, the Amarna Period officially ceased, and this ruler's modifications of Karnak show a conscious attempt to eradicate the memory of Akhenaten and his family. Horemheb launched an assault against the Aten and within the first ten years of his reign he ordered the Karnak structures pulled apart, block by block, to be reused in the foundations and fill of his own building projects. The remains of these temples have since been found in Horemheb's new sandstone constructions, the second and ninth pylons, as well as within the sandstone towers of the tenth pylon, which he completed atop the foundations of Amenhotep III (Azim 1982; Lauffray 1979: 111, 147; Redford 1984: 228). He also added an inscribed red granite gate to the tenth pylon entrance and a series of walls connecting pylons eight, nine, and ten, forming a new southern processional (Barguet 1962: 243 - 248, 254).

The addition of the second pylon extended the Amun-Ra Temple farther west, and its

construction would have necessitated the filling in of the existing T-shaped basin and canal fronting the temple. Perhaps this move westward was prompted by the river's continuing shift away from the temple.

Horemheb destroyed the court of Amenhotep II during his reworking of the southern approach to the temple, but he utilized many of the blocks to create a pillared structure set on a platform within the eastern wall of the court of the tenth pylon. The building, the "edifice of Amenhotep II," was designed as a parallelogram, its axes adjusted to reflect the line of the processions passing before it (Lauffray 1979: 143; Van Siclen 2005a: 42).

Despite the fact that Tutankhamen had dedicated his statuary and reliefs throughout the country to the traditional gods, Horemheb recarved many of the works of that king in his own name. At Karnak, this included the cartouches of Tutankhamen (and Aye) on the socles of the sphinxes along the avenue from the tenth pylon to the Mut Temple (Barguet 1962: 242; Cabrol 2001: 226; Murnane and Eaton-Krauss 1991).

Precinct of Amun-Ra in the 19th Dynasty

During his short reign, it seems that Ramesses I only had time to complete a few small projects and decorate the works of Horemheb, including the second pylon (Golvin and Goyon 1987: 44; Seele 1940: 12 - 22). On the interior of the court created by the completed pylon, Ramesses I added a small "station of the king." This narrow kiosk, with doors opening into the hall, offered the king a place to stand during cult activities. Its floor was ornamented with the "nine bows" of Egypt, allowing the king to literally "trample" his enemies during rituals in the court when standing inside the kiosk (Van Siclen 1986: 41 - 42).

Sety I exploited the huge space created between the second and third pylons to establish a new locus for the celebration of important rituals and festivals (previously observed in the *wadjet* hall) (Golvin and Goyon 1987: 44). The pharaoh erected a massive hypostyle hall with 12 sandstone columns supporting a central nave and 122 sandstone columns filling the side aisles. It was roofed with sandstone, and light entered the hall through clerestory stone window grills (Brand: The Karnak Great Hypostyle Hall Project). That Sety I—and not any of his predecessors—originally constructed the hypostyle hall is supported by examinations of the building. Peter Brand observed that the earliest inscriptions on the clerestory windows and architraves of the central colonnade date to this king's reign. By studying the methods by which the hall was decorated (which for these highest places was achieved before the mud-brick construction ramps were removed), Brand has shown that the original carving of the area must have been done immediately following the placement of the roof and clerestory blocks, thus during Sety I's reign (Brand 2000: 201 - 219, plans 2 - 3).

During his lifetime, Sety's artisans inscribed the northern half of the interior of the hall with beautifully carved relief scenes depicting cult activity (Brand 2000: 193, plan 1). The vestibule of the third pylon, now enclosed within the hall, was altered. The smiting scenes of Amenhotep IV/Akhenaten on its north wall were covered over with stone blocks (Sa'ad 1970). On the north exterior wall, the king's battles against numerous foreign foes were memorialized in a series of monumental relief scenes (Epigraphic Survey 1986; Schwaller de Lubicz 1999: 553 - 562).

Ramesses II completed and altered Sety I's unfinished decorative program on the walls and columns of the hypostyle hall (Brand 2000: 52 - 53; Seele 1940: 50). Battle scenes of the king were added to the hall's southern exterior wall, paralleling the military decoration of his father on the north wall (Murnane and al. 2004: 86 - 88, 103 - 104). The girdle wall enclosing the temple on its southern and eastern ends, built by Thutmose III, was now adorned with deeply carved relief scenes and inscriptions (Brand 2007: 57).

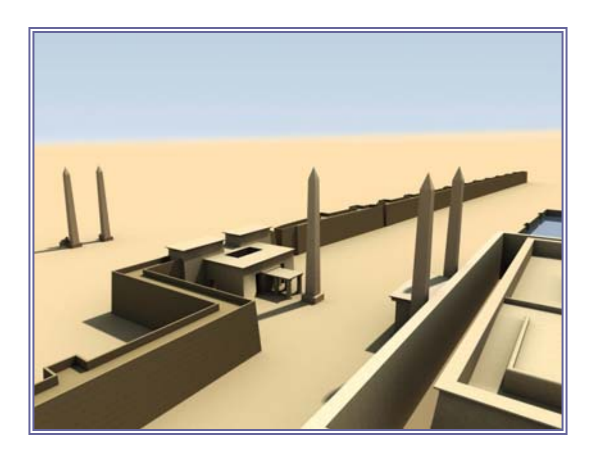


Figure 9. 3D visualization of east Karnak, Ramesses II's reign. Temple of "Amun-Ra, Ramesses, who hears prayers" fronts the "unique" obelisk. Outside the temple walls, two obelisks of Ramesses II with sphinx statues.

In the eastern section of Karnak, the king added a small shrine to the "unique" obelisk of Thutmose IV (fig. 9). The shrine, called "the temple of Amun-Ra, Ramesses, who hears prayers," consisted of a gateway and pillared hall with a central false door. Two lateral doors led to the object of veneration, the "unique" obelisk. A number of the column drums used for the hall were clearly taken from an earlier Thutmoside structure, and there is some evidence that there had been a shrine in this location previously (Barguet 1962: 223 - 240; Gallet 2007). The chapel seems to have functioned similarly to a contra-temple, as it was accessible to the public who visited for oracular judgments. Further east, along the temple's east-west axis, Ramesses II added an entrance to eastern Karnak, marked by two red granite obelisks and a pair of red granite sphinxes (Barguet 1962: 223 - 224; Bell 2002: 23; Cabrol 2001: 186).

Sety II was the next pharaoh to add significant structures to Karnak. In front of the second pylon (the west gate of the temple at the time), he placed a three-roomed quartzite and sandstone bark-shrine oriented perpendicularly to the north of the processional route. Its sanctuaries were dedicated to Amun, Mut, and Khons, and the barks of these gods would have paused here during festival journeys outside the temple (Chevrier 1940; Legrain 1929: 75 - 83).

Precinct of Amun-Ra in the 20th Dynasty

Building activity at Karnak at the start of the 20th Dynasty showed no signs of slowing down. Ramesses III added his own bark shrine to the area in front of the temple, opposite that of Sety II. This shrine took the shape and size of a small temple, including a small pylon, a court with colossal statue pillars, a hypostyle hall, and a sanctuary (Epigraphic Survey 1936a, 1936b; Legrain 1929: 85 - 123). Immediately north of the Amun-Ra Temple proper, Ramesses III renewed the inscribed stone gate of Amenhotep III in the mud-brick enclosure wall just north of the third pylon (Barguet 1962: 35 - 36 and plan 1). To the south, Ramesses III built a temple to the child-god Khons. Study of the temple's foundations showed that its design and construction began under Ramesses III, although some of the building elements may have been completed by later kings (Laroche-Traunecker 1982: 330 - 333). The date and form of the earlier temple of Khons on this location is unknown, although reused blocks in the bark sanctuary suggest to some scholars that such a cult building was present at least by the reign of Amenhotep III (Lauffray 1979: 214). However, these blocks, as well as the sphinxes of Amenhotep III creating an avenue to the south of the temple, may instead have been quarried from the mortuary temple of that king on the west bank of the river (Arnold, Dieter 1999: 30; Epigraphic Survey 1979: xvi).

Ramesses IV continued construction on the Khons Temple, additionally inserting his own cartouches and decoration to the innermost areas (Arnold, Dieter 1999: 25; *PM* 1972: 235 - 241). Within the Amun-Ra Temple proper, he drastically altered the appearance of the hypostyle hall by appending his cartouches to the columns, as well as carving new relief scenes on most of the shafts (Brand 2007: 53).

But the later Ramesside kings could not maintain the feverish pace of construction sponsored by the wealthier New Kingdom

rulers, and building activity tapered off sharply. Ramesses IX built the only significant structure, gracing the door to the southern processional route with a monumental inscribed gateway (Amer 1999). The most substantial contributions of the last king of the dynasty, Ramesses XI, and Herihor, his "High Priest of Amun," were the scenes and inscriptions in the Khons Temple's forecourt and hypostyle hall (Epigraphic Survey 1979; *PM* 1972: 229 - 235).

Precinct of Amun-Ra in the Early Third Intermediate Period (Dynasties 21 - 24)

Pinedjem, a "High Priest of Amun" and de facto ruler of Thebes for a period during the 21st Dynasty, occupied himself with further work at the Khons Temple, adding decoration to the temple's entrance pylon (he may also have completed construction on this pylon) and likely moving criosphinxes (ram-headed sphinxes) of Amenhotep III from another cult precinct to the front of the temple (Cabrol 2001: 26 - 27, 239 - 255; Laroche-Traunecker 1982: 317 - 318, 332; *PM* 1972: 224, 228 - 229). The sphinx-lined avenue led south from the Khons Temple toward Luxor, but it appears that it did not join up with the processional route to the latter temple, instead terminating in a basin connected to the Nile by a canal (El-Molla et al. 1993: 246 - 247).

To the west of the Amun-Ra Temple's main gate, the second pylon, Pinedjem may have placed a line of 100 or more criosphinxes on stone pedestals. This sphinx avenue is traditionally assigned to Ramesses II, whose titles are inscribed on the small statuettes between the animals' paws. A new theory, however, argues that the sphinxes, which stylistically appear to have been carved under Thutmose IV and Amenhotep III, stood at Luxor Temple in the 18th and 19th Dynasties. When Ramesses II modified that temple, he usurped the statues and rearranged them before his new court at Luxor. According to the theory, they were only moved to Karnak in the 21st Dynasty, when Pinedjem added his own name and inscriptions to the socles (Cabrol 1995: 25 - 27; Cabrol 2001: 193, 206 - 208). The exact length and terminus of this avenue remain unknown, as it was later reorganized when new constructions changed the front of the temple in the 25th Dynasty (Cabrol 1995: 2), but it likely extended up to the (later) first pylon, or to a quay beyond.

The first king of the 22nd Dynasty, the Libyan ruler Shoshenq I, reinstated the grand tradition of New Kingdom temple expansion and again moved Karnak's entrance further west. He constructed a huge columned court (the "Bubastite Court") before the second pylon of Horemheb, encompassing the Sety II shrine and the front section of the Ramesses III shrine/temple (fig. 10). The north and south walls of the court were lined by a colonnade of sandstone columns with papyrus-bud capitals (Legrain 1929: 45 - 50). On the western side, an entrance with a monumental central gate would have fronted the court. An inscription at Gebel el-Silsila of the priest Haremsaf mentions this entrance, later destroyed by Nectanebo I's construction of the huge first pylon. The central stone gate (left unfinished) probably was reused in Nectanebo's later construction. It is anepigraphic and cannot be dated, but the gate appears to be older than the Nectanebo pylons and may therefore be a vestige of the incomplete Shoshenq I project (Arnold, Dieter 1999: 35 - 36; Epigraphic Survey 1954: vii).

In the southeast corner of the new court, Shoshenq I built an entrance gateway (the "Bubastite Portal") flanked by two of the court's pillars, forming a type of portico. On the south (exterior) wall of the gate, the king inscribed a text recounting his military campaigns in Palestine, listing the names of many of the towns or cities he conquered. A contemporary account of Shoshenq's incursion into one of these cities, Jerusalem, appears in the Hebrew Bible (I Kings 14:25, II Chronicles 12:2, with the king's name written "Shishak") (Epigraphic Survey 1954: vii - viii). The formation of the court must have enclosed many of the sphinxes along the western avenue within its walls. Presumably, it was at this time (or possibly later, when the

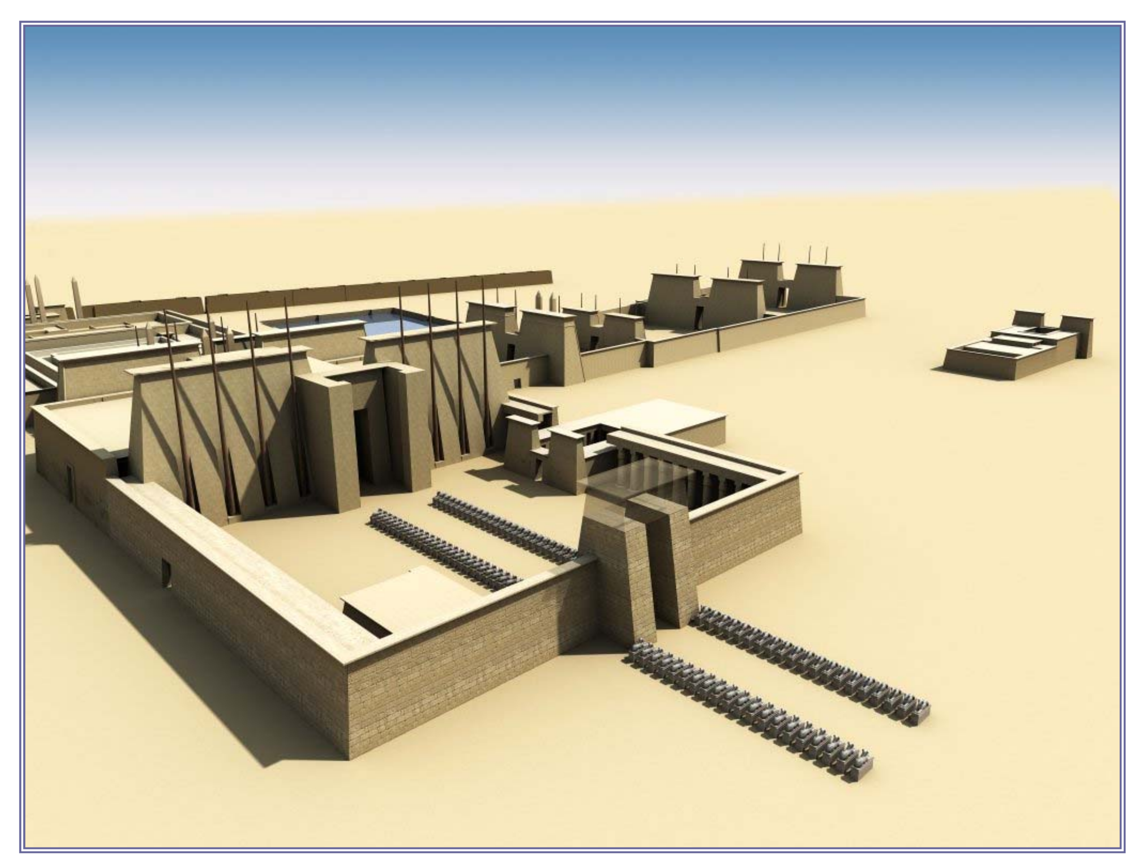


Figure 10. 3D visualization of columned "Bubastite Court" in front of second pylon in the reign of Shoshenq I. The gateway was never finished, so model depicts incomplete upper section in transparency.

Taharqo kiosk was added) that these sphinxes were moved to line the north and south walls of the court (Cabrol 2001: 209).

Some time around the reign of Shoshenq I, the construction of a new temple quay and a huge revetment wall began. The position of the stone revetment shows that the Nile of that time must have flowed right up to the edge of the quay, in front of the new entrance built by Shoshenq. A team of Supreme Council of Antiquities (SCA) archaeologists, led by Mansour Boraik, recently uncovered the line of the wall some 50 meters south of the present quay. The preserved section measures 3.5 meters in height. Inscriptional evidence from the embankment suggests that it was originally constructed in the 22nd Dynasty, with construction and repairs continuing through the fourth century BCE (El-Aref 2008). Previously excavated sections of the revetment 40 meters north of the quay show that the line of the wall continued similarly in that direction (Lauffray 1979: 92; Lauffray et al. 1975: fig. 3).

Small chapels dedicated to the funerary god Osiris appear at Karnak during the Third Intermediate Period. Generally, these were located to the north and northeast of the Amun-Ra Temple in small clusters. The chapel of *Osiris-Heqa-Djet* (Osiris, "Lord of Eternity") was a two-roomed structure decorated with scenes of the important priestess known as the "God's Wife of Amun," Shepenwepet I (Redford 1973: 20). This was one of a series of structures that would be bestowed by the "god's wives" during the succeeding dynasties.

Six quarters for priests were excavated from inside (to the west of) the buttressed enclosure wall of Thutmose III. The best preserved of these houses show that they were small mud-brick dwellings with open



Figure 11. 3D visualization of the Khons Temple with the porch of Taharqo.



Figure 12. 3D visualization of the kiosk of Taharqo in the court fronting second pylon. Only one of the pillars stands to full height today, although the bases of all six remain.

courtyards, three to four interior rooms, and staircases leading to upper terraces (Lauffray 1979: 201 - 201; Lauffray et al. 1969; Lauffray et al. 1975). Although the excavators acknowledged that the area could not be dated with precision, the houses were eventually assigned to the early Third Intermediate Period (21st - 22nd Dynasties) because of inscriptional material found within the buildings. However, recent excavation of a seventh house (directly south of the line of six habitations) and advancements in the understanding of Third Intermediate Period ceramics suggest the priestly quarters may have been primarily occupied much later, in Dynasties 26 and 27 (Masson 2007).

Precinct of Amun-Ra in the Late Third Intermediate Period (Dynasty 25)

While the focus on temple construction had shifted to the northern areas of Egypt in the 21st to 24th Dynasties, Karnak again took the spotlight under the Kushite kings. Shabaqo added two gateways before the small temple to Ptah (in the northern part of the precinct), as well as a colonnade and a columned porch in areas north of the Amun-Ra Temple. North of the *Akhmenu*, his colonnaded hall consisted of at least twelve limestone columns in two rows, originally decorated with blue-painted inscriptions. The entrance porch to the court of the third pylon, built of cylindrical columns with lines of inscribed texts, may have consisted of four rows of five columns (Arnold, Dieter 1999: 46 - 47; Leclant 1965: 19 - 23, 36 - 41; *PM* 1972: 192 - 197). Between the Amun-Ra Temple and the sacred lake, the king possibly built an earlier version of his "edifice" (discussed below), as blocks inscribed for Shabaqo were reused in the structure (Parker et al. 1979: 5 - 6).

It was Taharqo, however, who would make the biggest mark on Karnak, with a series of constructions rivaling those of the New Kingdom pharaohs. Dramatic columned entrance porches were appended to the front of the Khons Temple (fig. 11) and the eastern temple of "Amun-Ra who hears prayers." These both consisted of four rows of five columns, possibly roofed with wooden beams, the latter example also including low screen walls (Arnold, Dieter 1999: 57, 282; Leclant 1965: 56 - 57, 84).

Taharqo commissioned a giant kiosk for the court of Shoshenq I, positioned before and on axis with the second pylon. It was formed of two rows of five papyriform columns, topped by square abaci (fig. 12). Scholars generally agree that the north-south span of the kiosk (over 16 meters) could not have been bridged with a roof, but it is possible that the east-west lines were connected by architraves. Low screen walls connect the columns, with the exception of the areas left as gates on each of the sides. These walls were inscribed under the Ptolemies and may be

later additions or repairs. Between the columns stood an alabaster socle, possibly for an altar upon which to rest the divine bark, seemingly older than the kiosk itself. Excavations in the area show that an earlier structure with wooden poles originally stood here, and perhaps Taharqo's monument therefore replaced an earlier kiosk or a group of standards topped with figures of deities (Arnold, Dieter 1999: 51; Lauffray 1970, 1975; 1979: 102 - 107).

Possibly replacing an earlier structure of Shabaqo, Taharqo erected his sandstone "edifice" to the north of Karnak's sacred lake. The structure had two levels, with the lower, subterranean level the only one preserved. Study of the monument suggested that it was approached via a ramp on the east, which led to an open court on the upper story. A mud-brick courtyard fronted the building on its east side, cut through by a deep stone well. Often labeled a "Nilometer" (a place to measure the height of the Nile's inundation), it seems instead to have functioned as a well connecting to the primeval waters of *Nun* (Parker et al. 1979).

Taharqo began alterations on the temple of the goddess Opet to the southwest (the original structure, completely destroyed by later rebuilding, possibly dated to Amenhotep II or Thutmose III). A study of the construction methods of the temple's pylon demonstrated that it was built prior to the 30th Dynasty, probably in Dynasty 25. Blocks inscribed for Taharqo at the temple show that this king sponsored building work there, and he was most likely behind the erection of the pylon and a kiosk in the temple's first court (Azim 1987).

South of the quay, a paved stone ramp of Taharqo was built, descending into the bordering Nile. Inscriptions on the interior walls of the ramp show that it was utilized for rituals related to water, including the festival of the New Year (Lauffray 1979: 94 - 95; Traunecker 1972).

Constructions for Osiris continued at Karnak in the 25th Dynasty. These included the chapel of Osiris *Wennefer* "in the persea (tree)," built by the God's Wife of Amun, Shepenwepet II, and a new hall fronting the chapel of *Osiris-Heqa-Djet*, both to the northeast of the Amun-Ra Temple (Leclant 1965: 41 - 54). In the reign of Taharqo, new chapels were installed north of the third pylon (a chapel to Osiris *Neb-Ankh*) and southeast of the tenth pylon (a chapel to Osiris *Ptah-Neb-Ankh*) (Coulon and Defernez 2004: 138; Leclant 1965: 23 - 36, 110 - 113).

The 25th Dynasty ended with the sacking of Egypt by the Assyrian king Assurbanipal, and the temples of Thebes were reportedly plundered. Damage to the Amun-Ra Temple itself seems to have been only minimal, however, as little evidence of this event has been identified at the temple precinct.

Precinct of Amun-Ra in the Late Period

The 26th Dynasty saw only limited building at Karnak. The God's Wife of Amun Ankhnesneferibra erected two new chapels north of the hypostyle hall: the chapel of Osiris *Neb-Neheh* and the chapel of Osiris *Wennefer* "Lord of Sustenance." These were complemented by a series of other chapels to the north, closer to the temple of Montu (Coulon and Defernez 2004).

In the area southeast of the eastern gate and obelisks of Ramesses II, a mud-brick podium, now called the *Kom el-Ahmar* was built. Dating to the Saite or Persian Period, the function of the platform remains unknown (Redford 1994: xi, 2 - 10).

After the first period of Persian domination, construction resumed under the 29th Dynasty kings. Nepherites I and Psammuthis both likely funded the addition of a new storehouse and aviary located south of Karnak's sacred lake. The mud-brick and stone building contained ramps for the birds to access the lake, as well as areas for animal butchery. Inscriptions on the building describe it as a *shena-wab*, a place for the preparation of the god's daily meals. The structure appears to have replaced earlier such structures on the

same site (Arnold, Dieter 1999: 101 - 102; Traunecker 1987).

Outside the temple's west gate (the site of the later first pylon), a small chapel for the god's bark was erected. The chapel, built by Hakoris, possessed an extra-wide western door so that the god's bark could be removed from the Nile with its bow and stern parallel to the river and brought directly inside (fig. 13). The bark could be rested on the interior altar, then removed and taken to the temple gate via a narrower northern door, all without shifting its direction. Kushite Period blocks reused in the construction of the chapel suggest that it replaced an earlier, 25th Dynasty building on the same spot (Lauffray 1995c: 22 - 23, 59).

At the onset of the 30th Dynasty, Nectanebo I launched a mammoth construction program at greater Karnak. The king completely reshaped the sacred landscape, enclosing the temples of Amun-Ra, Mut (to the south), and Montu (to the north) in huge mud-brick enclosures. Probably at this time, the west wall of Sheshonq I's court was removed and construction of the first pylon—the largest pylon in Egypt—was begun as a monumental entrance to the temple. The unfinished central stone gate of the 22nd Dynasty was retained and the pylon built around it. The wall around the Amun-Ra Temple, over 20 meters high, was punctuated with a number of access gates. These stood on the north wall (next to the temple of Ptah), the east wall (across from the chapel of "Amun-Ra who hears prayers"), and the west wall's south section (facing the temple of Opet) (Arnold, Dieter 1999: 115 - 118).

In the southwest corner of the new precinct wall, Nectanebo added a gateway leading to a temple for the deity Opet (Arnold, Dieter 1999: 118; Azim 1987). The CFEETK is presently studying the architecture of the temple; the extent of Nectanebo's work here may therefore soon be clarified.

As part of his total redesign of the sacred precincts, Nectanebo I added a sandstone pavement and a series of human-headed



Figure 13. 3D visualization of the Hakoris bark shrine. Unusual wooden architrave supports the stone cavetto molding.

sphinxes to the entire two-kilometer processional route to Luxor Temple. The road was enclosed by a mud-brick wall along its eastern and western sides and lined with trees and plants. Only some of the sphinxes have been excavated, but based on their spacing, some 700 total would have lined the alleyway (Abd El-Raziq 1968; Arnold, Dieter 1999: 118; Cabrol 2001: 283 - 287). Ongoing excavations by the Supreme Council of Antiquities (SCA) within the present-day city of Luxor continue to expose the sphinxes and stone plinths along this route (Mansour Boraik of the SCA: personal communication 2009).

Nectanebo II may have expanded the sanctuary of *Khons-pa-Khered*, a small triple shrine to the southeast of the newly built enclosure wall. Recently, one scholar has questioned whether the renovations of central Karnak ascribed to Philip Arrhidaeus (see below) were in fact changes sponsored by Nectanebo II, later inscribed under the Macedonian king (Arnold, Dieter 1999: 131 - 132).

Precinct of Amun-Ra in the Ptolemaic and Roman Periods

The red granite bark-shrine of Thutmose III, situated in the heart of Karnak within the Palace of *Maat*, had likely been damaged by fires during the invasions of Egypt by the Assyrians or Persians in the seventh and sixth

centuries BCE. Amun-Ra's shrine was replaced with a similarly sized and shaped granite replica, inscribed with scenes depicting Philip Arrhidaeus (the brother of Alexander the Great) as pharaoh. It may have been during the installation of the new bark-shrine that the temple of Senusret I was razed, in anticipation of the construction of a new building at a higher level (Arnold, Dieter 1999: 131; Barguet 1962: 136 - 141).

Under the Ptolemies, Thebes lost her status as the most important Upper Egyptian city, as the new dynasty transferred the major administration of the south to the newly founded city Ptolemais (to the north, near present-day Sohag) (Vandorpe 1995: 210). Nevertheless, the Ptolemaic kings were careful to patronize the traditional Theban temples.

At Karnak, Ptolemy III added a huge stone gate in the enclosure wall south of the Khons Temple. Known today by its Arabic name, *Bab el-Amara*, the huge portal was covered with inscribed relief scenes and texts of that king. Details of the construction of this gate suggest that it was indeed built in the Ptolemaic Period and not earlier, in the 30th Dynasty, when the wall itself was erected (Golvin and Hegazy 1993: 146, note 2; Zignani 2003). Flanking the door, CFEETK archaeologists discovered the stone foundations of a pair of pylon towers (Lauffray et al. 1975: 23 - 26, fig. 11). These may have been part of Ptolemy's plan for the new entrance to the Temple of Khons, but they were never completed. The mud-brick enclosure wall was later rebuilt over the foundations to connect with the *Bab el-Amara* gateway (Laroche-Traunecker 1982: 329; Zignani 2003).

Ptolemy III also may have continued construction on the Opet Temple, possibly begun previously by Nectanebo I (Arnold, Dieter 1999: 164).

In the northeast sector of the precinct, Karnak received a new hypogeum, the "Osiris catacombs," under Ptolemy IV. Composed of a series of vaulted mud-brick corridors with painted plaster decoration, this structure included hundreds of small niches for the placement of statuettes of the deity (fig. 14). Located in an area of the precinct focused on the commemoration of this god since the Third Intermediate Period (and possibly even the New Kingdom), these catacombs display a continuity of religious practice through the Ptolemaic era (Leclère 1996, 2002; Leclère and Coulon 1998).



Figure 14. 3D visualization of interior of Osiris catacombs. The small niches on the left were for the placement of statuettes of the deity.

The Temple of Ptah received two additional gateways, extending its entrance to the west under Ptolemy VI and XII (Arnold, Dieter 1999: 216, pl. VIII).

Within the Amun-Ra Temple, the gate of the second pylon (damaged by fire) was restored. No later than the reign of Ptolemy IV a new stone facing and series of reliefs were added to the entrance's interior west façade. Texts and relief scenes dedicated to this king, as well as Ptolemy VI and VIII, adorn the door and the western section of the passage, thus dating the changes. In the reign of Ptolemy VI, damaged Ramesside scenes on the eastern part of the passage (caused by falling stone-roofing slabs when the abacus on one of the westernmost columns of the nave failed) were repaired and recarved in imitation of the originals (Brand 2001; Golvin and Goyon 1987: 14; Murnane and al. 2004: 98 - 102; Rondot and Golvin 1989). Repairs were made to the architraves, abaci, and column shafts damaged by this incident, and the small,

smoothed stones shoring up the shattered columns are easily seen today in the hall (Brand 2001). The date of these repairs cannot be precisely identified, but they likely were contemporary with the reworking of the second pylon's gate (Rondot and Golvin 1989).

Repairs of the passageway and vestibule of the third pylon also took place sometime in the Ptolemaic and Roman Periods. These areas, as well as two of the neighboring columns, were probably damaged by fire. Similar patches can be seen on the east side of the columns, although in this case, the small stones were not smoothed but left undressed. A renovation of the vestibule included its extension to the west, joining up with the easternmost columns of the nave (Brand 2001).

The Opet Temple was substantially rebuilt and decorated under Ptolemy VIII. The renovations included the replacement of the Thutmoside sanctuary, the substitution of brick walls with stone, and possibly the rebuilding of the porch and kiosk. Entered via the Nectanebo gate on the east, the temple at this time consisted of a small pylon, an entrance court with a pillared kiosk, a ramp leading into the raised temple hypostyle and sanctuary, and a series of crypts and a small rear chapel within the two-meter high platform base (Arnold, Dieter 1999: 197; Azim 1987; Lauffray 1979: 218).

Ptolemy VIII also modified the eastern temple of "Amun-Ra who hears prayers." The rear colonnade and base of the "unique" obelisk were enclosed. The central false door of Ramesses II was removed and a new doorway inserted into the western wall of the pillared court (Barguet 1962: 228 - 240).

Ptolemy XII began reconstruction of the small chapel to "Osiris the Coptite," located perpendicular to Taharqo's entrance porch in the eastern section of the precinct (Barguet 1962: 15 - 16).

Small stone "magical" or "healing chapels" appeared at greater Karnak in the Late Period. A fragment from one such chapel, found near the "unique" obelisk in the precinct's eastern section (Barguet 1962: 242, note 1), retained traces of a scene of "Horus on the crocodiles" (Horus *cippus*) and part of an inscribed text. The chapel, whose original location cannot be determined, dates to the Ptolemaic Period (Kákosy 1999: 14; Traunecker et al. 1983: 66 - 75). Two additional possible examples (of unknown date) were situated in the Amun-Ra Temple's first court and in the kiosk of the court of the Temple of Opet (Lauffray 1980: fig. 21; Lauffray et al. 1975; Traunecker et al. 1983: 75).

New discoveries at the site have reshaped our understanding of Karnak's environs under the Ptolemies, suggesting that urban areas extended up to the temple enclosure wall. Recently, a team of SCA archaeologists under the direction of Mansour Boraik discovered a bath complex to the northwest of the first pylon. The circular structure was composed of baked and plastered mud-brick, tiled with a mosaic stone floor. It contained low, individual seats for sixteen people. Around this structure, the excavators identified a series of water tanks and drains (El-Aref 2008).

Some time near the end of the Ptolemaic Period or the beginning of Roman rule in Egypt, a huge pit was dug into the court of the seventh pylon and filled with more than 17,000 statues, stelae, and other cultural objects. Georges Legrain discovered this pit in 1903. During five seasons of excavation, he and his team removed a vast quantity of objects within (although the work was abandoned before completion due to difficult excavation conditions). Why the ancient priesthood ordered the mass clearing out of the temple remains unknown, but it is apparent from the Legrain excavations that the pit was dug out in a single event, and that statuary and stelae were placed inside rather unsystematically (Azim and Réveillac 2004; De Meulenaere 1999; Goyon et al. 2004).

The Karnak precinct continued to house the domiciles of temple priests during the Ptolemaic and Roman Periods. To the east of the sacred lake, next to the Third Intermediate

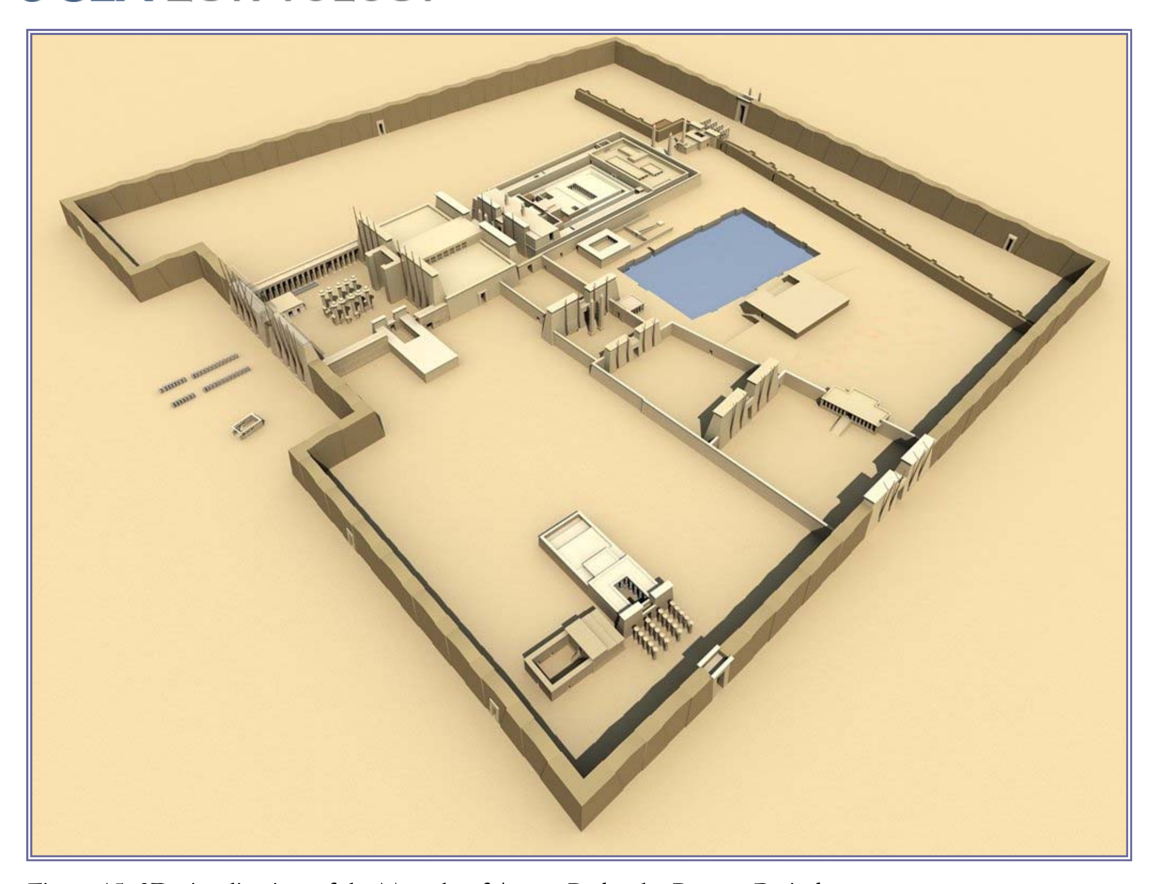


Figure 15. 3D visualization of the Temple of Amun-Ra by the Roman Period.

Period priests' dwellings, archaeologists uncovered a number of mud-brick houses. The squarish buildings had interior courts and stairways leading to a roof or second floor (Lauffray 1995b: 301 - 306). Ostraca from the periods of both Ptolemaic and Roman rule were found associated with these dwellings (Vandorpe 1995: 214).

The work of the Roman emperors at the Amun-Ra precinct generally consisted of the renovation, decoration, or renewal of existing buildings. Augustus added relief scenes to a number of temples, including the exterior of the Opet Temple and one of the rear rooms of the Khons Temple (*PM* 1972: 239 - 240, 252). Stelae dated to the reign of the emperor Tiberius record additions this ruler made to the Karnak temples. Although the mention of his work is vague, the texts dealing with the Temple of Mut explain that he added to that temple's huge mud-brick enclosure wall (De Meulenaere 1978). Reliefs and texts inscribed for the emperor on the chapel of "Osiris the Coptite" and on the fourth gate of the small Temple of Ptah show that Tiberius did in fact participate in reconstruction or renewal at the Karnak complex (Barguet 1962: 14 - 16; *PM* 1972: 197).

A larger renovation under the Roman rulers consisted of a major reorganization of the western entranceway to the Temple of Amun-Ra. The quay and processional paving were repaired and repaved. The sphinxes before the first pylon were rearranged and placed in their present location (fig. 15). Re-employed blocks dating from the Third Intermediate Period through the Ptolemaic Period were used in the quay's pavement and in the foundations and pedestals of the renovated sphinx dromos. Multiple floor-layers under the present paving included material dating to the

Roman, Ptolemaic, and Pharaonic Periods (Lauffray 1971: 53 - 56; Lauffray et al. 1971).

A small, sandstone Roman chapel was added just outside the temple's first pylon. It was placed perpendicular to the central gateway, opening onto the processional avenue (not shown in Figure 15). A portico of Corinthian columns fronted its single room. This chapel was dedicated to the imperial cult, and inscriptions dedicated to Roman emperors were identified on statue bases found within (Lauffray 1971: 118 - 121, fig. 31).

By the end of Ptolemaic rule in Egypt, the Nile had shifted further to the west, and the area around the temple's quay and revetment wall had silted up. Small mud-brick structures have been uncovered around the river ramps and the chapel of Hakoris. A large rectangular cistern made of mud-brick was positioned just south of the quay. Next to the Roman temple, a circular pool for collecting water probably functioned to irrigate the plants lining the sphinx avenue. The layers of Roman occupation were followed by levels dating to the Byzantine era (Lauffray 1971: 121 - 128, figs. 2, 33). Byzantine mud-brick walls have been identified west of the quay (Lauffray et al. 1975: 6 - 8), in an area that the recent discovery of the stone revetment wall shows would have been submerged during the Third Intermediate Period.

Instead of benefiting from continued imperial patronage, by the fourth century CE, monuments at Karnak were being torn down rather than constructed. Two obelisks, the "unique" obelisk of Thutmose IV in east Karnak and the western obelisk of Thutmose III in front of the seventh pylon, were removed from the temple precinct and shipped to Alexandria. They were later sent to Constantinople and Rome, to stand in the imperial capitals (Habachi 1984: 115 - 116, 145 - 150). The other remaining obelisks were eventually used as granite building material—broken into pieces and re-purposed for use as door thresholds and millstones (Gabolde 2007).

Bibliographic Notes

The literature on the Temple of Amun-Ra at Karnak is vast and cannot be adequately summarized here. The history of excavation and clearance at Karnak in the nineteenth and early twentieth centuries has not been included in this article, but those interested in the results of the early investigations of the "Direction des Travaux de Karnak"—the official commission for the study and conservation of Karnak Temple created in 1895—can see both Georges Legrain (1929) and the more recent summary of his work in Azim and Réveillac (2004). The excavation reports of a later director of that commission, Henri Chevrier, were published in the journal *Annales du service des antiquités de l'Égypte* in the 1940s and 1950s. Excavation and study efforts since 1967 by the Centre Franco-Égyptien d'Étude des Temples de Karnak (CFEETK) are published frequently in the journal *Les Cahiers de Karnak*, the initial four volumes of which were published as volumes 18 - 21 of the journal *Kêmi*. Numerous individual studies on the architecture and decoration of individual buildings at the temple have emerged in the past thirty years, many of which are cited in the references for this article. There are also a number of more synthetic studies, reviewing the site as a whole. Paul Barguet's overview of the Amun-Ra precinct contains a discussion of both the decorative scenes and texts of many of the temple's structures; it remains an indispensable work for understanding the function of the temple (Barguet 1962). Other informative reviews of the site include Lauffray (1979), Traunecker and Golvin (1984), Golvin and Goyon (1987), and Schwaller de Lubicz (1999). A recent book on the chronological phases of the temple's development by Blyth (2006) synthesizes in detail many of the French-language publications to render the conclusions of the CFEETK at Karnak accessible to the English-speaking readership. The *References* below focus on the major publications of the buildings and features mentioned, as

well as the most current discussions or re-evaluations of their form and function. In most cases, the quantity of material prevents the present overview from documenting the changing interpretation of buildings and features since their discovery. Additionally, descriptions of the individual structures (including their chronology or appearance) in ancient texts or artwork have only been mentioned in limited cases. Readers should look to individual articles on specific buildings for this information.

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Figure 1. 3D visualization of Middle Kingdom temple with mud-brick enclosure walls and pillared portico. Based on drawings of Gabolde (1998, 1999). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 2. 3D visualization of fourth pylon with fasciculated columns and standing Osiride statues of Thutmose I between the seated statues of the king. Standing statues based on photographs of the extant colossi. Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 3. 3D visualization of one of Hatshepsut's obelisks in the *wadjet* hall during the queen's reign. Wooden ceiling (rear) and papyriform columns based on the drawings of Carlotti and Gabolde (2003: figs. 10 a and b). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 4. 3D visualization of seventh pylon with Thutmose III's obelisks. The imagery on left (west) obelisk has been reconstructed using photographs of remaining section in Istanbul, Turkey. The pylon's imagery reflects the relief extant at Karnak today. Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 5. 3D visualization of the *wadjet* hall after the modifications of Thutmose III. Pillar decoration based on the remaining column bases at the temple today. Reconstruction based on the drawings and plans of Carlotti and Gabolde (2003: figs. 11 - 12 a and b). Location and size of clerestory windows based on the reconstructions by Larché (2007: pl. LXXIX). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 6. A scene of Queen Hatshepsut in the "Palace of *Maat*." The queen's figure, as well as her name in the yellow cartouches, has been carefully chiseled away. Photograph courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 7. The chapel of Amenhotep II reconstructed in Karnak's Open Air Museum. The faux pink-granite posts flanking the chapel show a possible context for the chapel within the festival court. Photograph courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 8. The double peristyle of Thutmose IV reconstructed in Karnak's Open Air Museum. Photograph courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 9. 3D visualization of east Karnak, Ramesses II's reign. Temple of "Amun-Ra, Ramesses, who hears prayers" fronts the "unique" obelisk. Outside the temple walls, two obelisks of Ramesses II with sphinx statues. Reconstruction based on the published plan by Carlotti (2002: pl. 1). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 10. 3D visualization of columned "Bubastite Court" in front of second pylon in the reign of Shoshenq I. The gateway was never finished, so model depicts incomplete upper section in transparency. Reconstruction based on the hypotheses of Dieter Arnold (1999: fig. 6). Basic layout of courtyard developed from overall plan of temple by Carlotti (2002: pl. 1). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 11. 3D visualization of the Khons Temple with the porch of Taharqo. Reconstruction of position of pillars based on the plans of Laroche-Traunecker (1982: fig. 4). Appearance of pillars based on the standing columns of the Taharqo porch at the temple of Ramesses II, east Karnak. Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 12. 3D visualization of the kiosk of Taharqo in the court fronting second pylon. Only one of the pillars stands to full height today, although the bases of all six remain. Reconstruction based on the drawings of Lauffray (1970: figs. 2, 26 - 33) and Carlotti (1995: pl. XV). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 13. 3D visualization of the Hakoris bark shrine. Unusual wooden architrave supports the stone cavetto molding. Reconstruction based on the drawings of Lauffray (1995c: figs. 5, 11, 33). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 14. 3D visualization of interior of Osiris catacombs. The small niches on the left were for the placement of statuettes of the deity. Reconstruction based on the plans of Coulon (1995: pls. III, IV, VII, VIII). Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.

Figure 15. 3D visualization of the Temple of Amun-Ra by the Roman Period. Model image courtesy of the Digital Karnak Project: http://dlib.etc.ucla.edu/projects/Karnak/. Copyright of the Regents of the University of California.